

**14 hours ZOOM & PHYSICAL**  
**Program**



# MEASUREMENT AND CALIBRATION SYSTEM



**HYBRID  
TRAINING**

**29 & 30 Oct 2025 (Wed & Thu)**



**Remote Online Training (Zoom) &  
Dorsett Grand Subang Hotel,  
Selangor (Physical)**



**\*\* Choose either Zoom OR Physical Session**



## The Workshops will help you to:

1. Understand Calibration and Requirements based on ISO9001 & ISO17025
2. Relationship of Metrology and Calibration to Quality System
3. Establish & implement techniques to determine Calibration Frequency - Equipment, mechanical gages and test devices
4. Understand Calibration Control System & Measurement Uncertainty
5. Able to read and understand how to verify calibration reports.
6. Understanding disposition of equipment and products when out of tolerance.
7. Know resolution, precision, and accuracy of a measurement system
8. The basic concept of metrology for different types of calibrations and the technical terms commonly used
9. How to interpret and understand the content of a typical calibration report

## Who Must Attend

Managers, Engineers, Technicians, Supervisors overall any personnel handling Calibrated tools & Equipment. Relevant for all industries.

## Methodology

Seminar consists of 2 days training workshops

Fundamental workshop will give an insight on Calibration requirements based on ISO 9001 & ISO 17025

## OVERVIEW

### WHY CALIBRATION MATTERS?

1. **Accuracy and Precision:** Calibration ensures that measuring instruments produce accurate and precise measurements. This is vital for maintaining quality control and ensuring that products meet specified standards and tolerances.
2. **Quality Assurance:** Regular calibration helps in maintaining consistent quality of the products. Deviations from established specifications can lead to defects, which can affect the performance and safety of the products manufactured.
3. **Regulatory Compliance:** Many industries are subject to regulations and standards (such as ISO, FDA, etc.) that require regular calibration of equipment. Compliance with these regulations is essential to avoid legal issues and penalties.
4. **Cost Efficiency:** By ensuring that equipment is properly calibrated, manufacturers can reduce waste and rework caused by inaccurate measurements. This can lead to significant cost savings over time.
5. **Safety:** Inaccurate measurements can lead to unsafe conditions in the manufacturing process or in the final products. Calibration helps to mitigate risks and enhance workplace safety.
6. **Equipment Longevity:** Properly calibrated equipment is less likely to suffer from wear and tear caused by incorrect usage or readings, thereby extending the lifespan of machinery and tools.
7. **Customer Satisfaction:** Delivering high-quality products that meet customer specifications fosters trust and satisfaction, which can lead to repeat business and a strong reputation in the industry.

Overall, calibration is an integral part of maintaining operational excellence, ensuring product reliability, and fostering continuous improvement in the manufacturing sector

## COURSE CONTENT

### **Day 1:**

**9.00 A.M. - 12.00P.M.**

Pre-Test Assessment

#### **Module 1 : Introduction to Calibration**

- History of measurements
- Importance of calibration in quality assurance.

Module 2 : Basics of Measurement and Errors

- Key measurement concepts (accuracy, precision, traceability)
- Types of errors: systematic vs. random errors
- Common causes of measurement inaccuracies

Module 3: Understanding Measurement Uncertainty

- What is uncertainty in calibration?
- Factors contributing to uncertainty.
- Practical examples of uncertainty in different types of measurements.

**1.00P.M. to 5.00 P.M.**

#### **Module 4: Types of Measurement Equipment**

- Overview of common instruments: digital multimeters, thermometers, calipers, and pressure gauges.
- Basic working principles of each instrument.

#### **Module 5: Calibration Standards and Tools**

- Types of reference standards and their usage (e.g., gauge blocks, standard weights).
- Importance of maintaining calibration equipment

#### **Module 6: Establishing Calibration Schedules**

- Factors influencing calibration intervals: usage frequency, environmental conditions, and equipment type.
- Manufacturer recommendations vs. historical performance

## COURSE CONTENT

### Day 2

9.00 A.M. to 12.00 P.M.

#### **Module 7: Calibration Process Overview**

- General steps in a calibration process
- Understanding reference points and calibration curves
- Examples of calibration documentation and reports

#### **Module 8: Calibration for Specific Instruments**

- Electrical Instruments: Basics of voltage, current, and resistance calibration.
- Mechanical Instruments: Calibration of length, depth and dimension
- Thermal Instruments: Ice-point and boiling-point verification for thermometers

#### **Module 9: Handling and Storage of Measurement Equipment**

- Proper handling to maintain instrument accuracy.
- Environmental considerations (humidity, temperature, dust).
- Preventing contamination and damage.

1.00P.M. to 5.00 P.M.

#### **Module 10: Interpreting Calibration Certificates**

- Key elements of a calibration certificate.
- Understanding results, traceability, and uncertainty values.
- How to identify and address discrepancies.

#### **Module 11: Quality Assurance in Calibration**

- Best practices for maintaining calibration compliance.
- Auditing calibration processes for continuous improvement.
- Risk management strategies for calibration errors.

#### **Module 12: Conclusion**

- Training Summary
- Post Test Assessment
- Training Evaluation